

## ABSTRACT OF THE DISCLOSURE

Apparatus and method for thin film deposition especially in reactive conditions. The most important problem solved by the invention is the realization of optical coatings with negligible optical absorption, of high quality and low cost even on unheated substrates, being the improvement due to the introduction of a further plasma at RF/pulsed DC, in comparison with the previous techniques, produced by the substrates holder RD/pulsed DC bias which generates a plasma in front of the substrates. The invention lies in the technical field of the thin film treatments and in the application field of the production of thin films, in particular for optical use. This further plasma allows obtaining the right stoichiometry of the deposited film by increasing the reactivity of the reactive gas present in the plasma and, in addition, introduces an energetic ion bombardment of the substrate before and during the growth of the film which improves the adherence and the deposit compactness.